

Title (en)

ADAPTIVE MODEL PREDICTIVE CONTROL FOR HYBRID ELECTRIC PROPULSION

Title (de)

ADAPTIVE MODELLPRÄDIKTIVE STEUERUNG FÜR ELEKTRISCHEN HYBRIDANTRIEB

Title (fr)

COMMANDE PRÉDICTIVE DE MODÈLE ADAPTATIF POUR PROPULSION ÉLECTRIQUE HYBRIDE

Publication

EP 3693268 A1 20200812 (EN)

Application

EP 20155575 A 20200205

Priority

US 201962802263 P 20190207

Abstract (en)

A hybrid electric propulsion system (100) includes a gas turbine engine (20) having at least one compressor section (24) and at least one turbine section (28) operably coupled to a shaft. The hybrid electric propulsion system includes an electric motor (212A,212B) configured to augment rotational power of the shaft of the gas turbine engine. A controller (256) is operable to determine an estimate of hybrid electric propulsion system parameters based on a composite system model (302) and sensor data, determine a model predictive control state and a prediction based on the hybrid electric propulsion system parameters and the composite system model, determine a model predictive control optimization for a plurality of hybrid electric system control effectors (240) based on the model predictive control state and the prediction using a plurality of reduced-order partitions of the composite system model, and actuate the hybrid electric system control effectors based on the model predictive control optimization.

IPC 8 full level

B64C 11/30 (2006.01); **B64D 27/24** (2006.01); **F01D 7/00** (2006.01)

CPC (source: EP US)

B64D 27/02 (2013.01 - US); **F01D 15/10** (2013.01 - EP); **F02C 9/00** (2013.01 - US); **B64D 27/026** (2024.01 - US); **F05D 2220/323** (2013.01 - US); **F05D 2220/76** (2013.01 - EP US); **F05D 2240/60** (2013.01 - US); **F05D 2260/80** (2013.01 - US); **F05D 2270/09** (2013.01 - US); **F05D 2270/20** (2013.01 - US); **F05D 2270/44** (2013.01 - US); **F05D 2270/80** (2013.01 - US); **Y02T 50/60** (2013.01 - EP)

Citation (search report)

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Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3693268 A1 20200812; **EP 3693268 B1 20230517**; US 11555455 B2 20230117; US 2020347787 A1 20201105; US 2023160347 A1 20230525

DOCDB simple family (application)

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